IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application No:	10/708,677
Filing Date:	March 18, 2004
Applicant(s)	Timothy G. Offerle et al.
Group Art Unit:	3683
Confirmation No:	2676
Examiner:	Christopher P. Schwartz
Title:	METHOD AND APPARATUS FOR PREDICTING THE POSITION OF A TRAILER RELATIVE TO A VEHICLE
Attorney Docket No:	81095828 (36190-24)
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February 19, 2008

RESPONSE TO NOTICE OF NON-COMPLIANT APPEAL BRIEF AND CORRECTED APPEAL BRIEF

This brief is submitted in response to the Notification of Non-Compliant Appeal Brief mailed February 29, 2008.

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I. Real Party in Interest

The real party in interest in this matter is Ford Global Technologies, LLC, which is a wholly owned subsidiary of Ford Motor Company, both of Dearborn, Michigan (hereinafter "Ford").

II. Related Appeals and Interferences

There are no other known appeals or interferences which will directly affect or be directly affected by or have bearing on the Board's decision in the pending appeal.

III. Status of the Claims

All of pending Claims 1-30 are on appeal.

Claims 1, 12 and 21 are in independent form.

IV. Status of Amendments

No amendments were filed following the Final Rejection.

V. Summary of Claimed Subject Matter

There are three independent claims in this case; i.e., Claims 1, 12 and 21. Each is summarized below.

Independent Claim 1

Claim 1 is best understood with reference to Appellants' Figures 2, 3, 4, 19 and 20, and with further reference to Appellants' Specification at paragraph [0082], lines 1-29; paragraph [0083], lines 1-34; paragraph [00120], lines 1-10; paragraph [00121], lines 1-30; paragraph [00122], lines 1-14; and paragraph [00123], lines 1-7.

A method for use in a vehicle, 10, includes sensing a current position, 46, 48, 254, of a trailer, 160, relative to vehicle 10, and determining a vehicle steering wheel angle, 38, 50, 254. A predicted position, 258, of trailer 160 relative to vehicle 10, is based on the current position and the steering wheel angle, 258; the predicted position is displayed, 260, within vehicle 10 along with the current position and the predicted position of the trailer relative to the vehicle.

Independent Claim 12

Claim 12 is best understood with reference to Appellants' Figures 2, 3, 4, 19 and 20, and with further reference to Appellants' Specification at paragraph [0082], lines 1-29; paragraph [0083], lines 1-34; paragraph [00120], lines 1-10; paragraph [00121], lines 1-30; paragraph [00122], lines 1-14; and paragraph [00123], lines 1-7.

A method of controlling a vehicle, 10, having a trailer, 160, includes generating a reverse direction signal, 230, 254, corresponding to a reverse direction of vehicle 10, followed by sensing a current position of a trailer relative to the vehicle, 46, 48, 174, 254. Steering wheel angle is determined, 30, 30, 254. A predicted position of trailer 160 relative to vehicle 10 is determined based on the current position of the trailer, 254, and the steering wheel angle 258. The current position and the predicted position are displayed, 260, within vehicle 10 in response to the reverse direction.

Independent Claim 21

Claim 21 is best understood with reference to Appellants' Figures 2, 3, 4, 19 and 20, and with further reference to Appellants' Specification at paragraph [0082], lines 1-29; paragraph [0083], lines 1-34; paragraph [00120], lines 1-10; paragraph [00121], lines 1-30; paragraph [00122], lines 1-14; and paragraph [00123], lines 1-7.

A system for a vehicle, 10, coupled to a trailer, 160, includes a position sensor, 46, 48, generating a trailer position signal, 174, corresponding to a trailer position, and a sensor, 48, for generating a reverse direction signal corresponding to a reverse direction of the vehicle. A controller, 26, coupled to a display, 68, as well as to a steering wheel angle sensor, 38, 50, displays a predicted path of the trailer in response to the position signal.

VI. Grounds of Rejection to be Reviewed on Appeal

The following issues are presented in this appeal:

1. The rejection of Claims 1-27, 29 and 30 under 35 U.S.C. §103(a) as being unpatentable over Okamoto (U.S. Patent 6,587,760) in view of Fischer et al. (U.S. Patent 7,089,101).

2. The rejection of Claim 28 under 35 U.S.C. §103(a) as being unpatentable over Okamoto in view of Fischer et al. as applied to Claim 21, and further in view of Yoshioka et al. (U.S. Patent 5,461,357).

3. The rejection of Claims 1-27, 29 and 30 under 35 U.S.C. §103(a) as being unpatentable over Fischer et al. in view of Okamoto.

4. The rejection of Claim 28 under 35 U.S.C. §103(a) as being unpatentable over Fischer et al. in view of Okamoto as applied to Claim 21, and further in view of Yoshioka et al.

VII. Argument

1. The rejection of Claims 1-27, 29 and 30 under 35 U.S.C. §103(a) as being unpatentable over Okamoto (U.S. Patent 6,587,760) in view of Fischer et al. (U.S. Patent 7,089,101) is not sustainable.

The Examiner states that Okamoto discloses a parking system using images of a vehicle, and its environment, projected on a screen. In other words, the image of the vehicle is shown on the screen along with its surroundings. The Examiner admits that Okamoto teaches nothing regarding the use of a system with a trailer. For that, the Examiner looks to Fischer which, the Examiner asserts, teaches:

> "During the driving maneuver, the steering wheel position which the driver has to set in order that the actually registered trailer angle Bact corresponds to the desired trailer angle Bdes is displayed to the driver."

The Examiner concludes with the argument that:

> "One having ordinary skill in the art at the time of the invention would have found it obvious to have modified the system of Okamoto to include the ability to park the vehicle while towing a trailer, as taught by Fischer et al.,...."

Appellants respectfully submit that neither Okamoto nor Fischer, whether taken singly or in combination with each other, either teach or suggest Appellants' claimed invention. As set forth in independent Claims 1, 12, and 21, Appellants' invention is directed to a method and system for determining the predicted position of a trailer relative to a tow vehicle, based on the current position of the trailer with respect to the vehicle and the steering wheel angle. This predicted position is displayed within the vehicle, along with the current position of the trailer with respect to the vehicle. In other words, what Appellants are describing is a vehicle having a hinge point in the middle, with the hinge point being the hitch located at the hitch ball joining a trailer to the vehicle. Appellants' method allows a vehicle operator to observe the current position of the trailer with respect to the vehicle and a predicted position of the trailer with respect to the vehicle.

In contrast with the claimed invention as set forth first in independent Claims 1 and 12, and 21, Okamoto teaches a system for displaying the vehicle and its surroundings and an image on a screen. What is predicted is the movement of the vehicle with respect to its surroundings. Of course, Okamoto can't teach anything regarding a vehicle having two parts to it, with a hinge in between, because Okamoto is devoid of any teaching or suggestion regarding application of its system to a trailer. Okamoto deals only with the positioning of the vehicle with respect to the outside world; Okamoto teaches nothing regarding intra-vehicle issues.

Fischer, on the other hand, teaches a system which may be used for tracking the angle of a trailer with respect to a vehicle. The actual angle is compared with a desired angle and the error is used to calculate a new steering angle, which is displayed to the driver. Fischer does NOT display the vehicle and trailer to the driver. Fischer merely gives the driver a corrective steering angle. Fischer neither teaches nor suggests anything regarding predicting the path of a

trailer or, for that matter, predicting the angle of the trailer with respect to the motor vehicle. Fischer is only a steering correction device which lacks any predictive capability.

Because Okamoto teaches nothing regarding the attitude of a vehicle with respect to a towed trailer, and because Fischer teaches nothing regarding either predicting or displaying any attitude of any part of a vehicle with respect to itself, the two teachings are not properly combined and, indeed, even if they were, one would have a system which shows a position of only a portion of vehicle upon the ground, without the predictive capability to show if a trailer is on its way to a "jackknife" situation with respect to a tow vehicle. As a result, whether taken alone, or in any combination with each other, the cited references cannot support a prima facie case of obviousness, and the Examiner's rejection should be reversed.

2. The rejection of Claim 28 under 35 U.S.C. §103(a) as being unpatentable over Okamoto in view of Fischer et al. as applied to Claim 21, and further in view of Yoshioka et al. (U.S. Patent 5,461,357), is not sustainable.

Claim 28, which depends from Claim 21 is subject to the same base rejection, supplemented by Yoshioka, but Yoshioka, which discloses an obstacle detection device, simply cannot the teachings missing from the combination of Okamoto and Fischer. Indeed, the Examiner relies upon Yoshioka for only an ultrasonic detector. Claim 28 is therefore allowable notwithstanding the Examiner's rejection.

3. The rejection of Claims 1-27, 29 and 30 under 35 U.S.C. §103(a) as being unpatentable over Fischer et al. in view of Okamoto, is not sustainable.

Appellants have carefully explained the detailed reasoning supporting their conclusion that neither Fischer, nor Okamoto, whether taken singly, or in any combination with each other, either teaches or suggests Appellants' claimed invention, and, as a result, Appellants' simply

renew their conclusion that Examiner has failed to make a prima facie case of obviousness. The Examiner's rejection is nothing more than restatement of the prior rejection of these claims. The Examiner should therefore be reversed for the reasons stated, supra.

4. The rejection of Claim 28 under 35 U.S.C. §103(a) as being unpatentable over Fischer et al. in view of Okamoto as applied to Claim 21, and further in view of Yoshioka et al., is not sustainable.

Please see Appellants' response to the previous rejection. Once, again, the Examiner should be reversed for the reasons stated, supra, because his rejection is nothing more than a restatement of the earlier rejection.

VIII. Conclusion

For the foregoing reasons, Appellants respectfully request that the Board direct the Examiner in charge of this examination to withdraw the rejections.

Please charge any fees required in the filing of this appeal to deposit account 06-1510.

Respectfully submitted,

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IX. Claims Appendix

1. **(Previously Presented)** A method for use in a vehicle comprising:

sensing a current position of a trailer relative to the vehicle;

determining a vehicle steering wheel angle;

determining a predicted position of the trailer relative to the vehicle based on the current position and the steering wheel angle; and

displaying within the vehicle the current position and the predicted position of the trailer relative to the vehicle.

2. **(Original)** A method as recited in claim 1 wherein sensing a current position comprises sensing the current position in response to a camera.

3. **(Original)** A method as recited in claim 1 wherein sensing a current position comprises sensing the current position in response to a reverse aid system.

4. **(Original)** A method as recited in claim 1 wherein sensing a current position comprises sensing the current position in response to a hitch sensor.

5. **(Original)** A method as recited in claim 1 further comprising applying brake-steer to the trailer to reduce the turning radius of the trailer and vehicle.

6. **(Original)** A method as recited in claim 1 further comprising applying brake-steer to the trailer and vehicle to reduce the turning radius of the trailer and vehicle.

7. **(Original)** A method as recited in claim 1 further comprising applying brake-steer to the vehicle to reduce the turning radius of the trailer and vehicle.

8. **(Original)** A method as recited in claim 7 wherein applying brake-steer comprises applying at least one brake at a first wheel to reduce a vehicle turning radius.

9. **(Original)** A method as recited in claim 7 wherein applying brake-steer comprises applying an increased drive torque to a second wheel relative to a first wheel.

10. **(Previously Presented)** A method as recited in claim 7 wherein applying brake-steer comprises increasing a normal load on the vehicle.

11. **(Original)** A method as recited in claim 1 wherein determining a predicted position comprises determining a vehicle trailer interference and displaying the interference.

12. **(Previously Presented)** A method of controlling a vehicle having a trailer comprising:

generating a reverse direction signal corresponding to a reverse direction of the vehicle;

sensing a current position of a trailer relative to the vehicle;

determining a vehicle steering wheel angle;

determining a predicted position of the trailer relative to the vehicle based on the current position of the trailer and the steering wheel angle; and

displaying the current position and the predicted position within the vehicle in response to the reverse direction.

13. **(Previously Presented)** A method as recited in claim 12 wherein sensing a current position comprises sensing a current position in response to a camera.

14. **(Original)** A method as recited in claim 12 wherein sensing a current position comprises sensing a current position in response to a reverse aid system.

15. **(Original)** A method as recited in claim 12 wherein sensing a current position comprises sensing a current position in response to a hitch sensor.

16. **(Original)** A method as recited in claim 12 wherein generating a reverse direction signal comprises generating a reverse direction from a shift lever.

17. **(Previously Presented)** A method as recited in claim 12 wherein generating a reverse direction signal comprises generating a reverse direction from a push button.

18. **(Original)** A method as recited in claim 12 wherein generating a reverse direction signal comprises generating a reverse direction from a transmission controller.

19. **(Original)** A method as recited in claim 12 wherein generating a reverse direction signal comprises generating a reverse direction from a wheel speed sensor.

20. **(Original)** A method as recited in claim 12 wherein generating a vehicle steering angle comprises generating a steering angle in response to a steering angle sensor.

21. **(Original)** A system for a vehicle coupled to a trailer comprising:

a position sensor generating a trailer position signal corresponding to a trailer position;

means to generate a reverse direction signal corresponding to a reverse direction of the vehicle;

a display;

a steering wheel angle sensor; and

a controller coupled to the trailer position signal display, and steering wheel angle sensor, said controller displaying a predicted path of the trailer in response to the position signal.

22. **(Original)** A system as recited in claim 21 wherein means to generate a reverse direction signal comprises a shift lever.

23. **(Original)** A system as recited in claim 21 wherein means to generate a reverse direction signal comprises a push button.

24. **(Original)** A system as recited in claim 21 wherein means to generate a reverse direction signal comprises a transmission controller.

25. **(Original)** A system as recited in claim 21 wherein means to generate a reverse direction signal comprises a wheel speed sensor.

26. **(Original)** A system as recited in claim 21 wherein the position sensor comprises a hitch sensor.

27. **(Original)** A system as recited in claim 21 wherein the position sensor comprises a reverse aid sensor.

28. **(Original)** A system as recited in claim 21 wherein the reverse aid sensor comprises an ultrasonic sensor.

29. **(Original)** A system as recited in claim 21 wherein the position sensor comprises a camera.

30. **(Original)** A system as recited in claim 21 further comprising an input device coupled to said controller.

X. Evidence Appendix

None.

XI. Related Proceedings Appendix

None.